

ABSTRACT

A method is disclosed for converting light hydrocarbons (e.g. methane or natural gas) to synthesis gas employing a nonmicroporous, thin shell catalyst that catalyzes a net partial oxidation reaction. Certain preferred catalysts comprise a thin outer layer comprising at least one catalytically active metal disposed on a discrete nonmicroporous support structure. A preferred thin shell catalyst has an effectiveness factor greater than 0.1 when utilized in a partial oxidation reaction.